UNIVERSITI PUTRA MALAYSIA

HOUSEHOLD BEHAVIOUR TOWARDS WASTE RECYCLING IN AMPANG JAYA AND SUBANG JAYA, SELANGOR

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By

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Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Master of Science

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

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Chairman: **Associate Professor Mohd Nasir Hassan, PhD**

Faculty: **Environmental Studies**

In order to achieve the statutory target for recycling, one of the waste management strategies is to take into account household recycling effort, perceptions and their attitudes towards the recycling scheme. However, there are not many published reports on the perceived effectiveness and public attitudes towards such schemes. Thus, it is important to consider these factors given that recycling schemes are dependent upon the voluntary behaviour of the public. This research was carried out to evaluate the public's perception towards the recycling scheme. Two areas have been chosen for the study and face-to-face interviews were carried out to compare households recycling participants' behaviours towards recycling scheme. In addition the study was also carried out to identify the barriers, level of incentives and traits of recycling participants and non-recycling participants. Result from this study would help the local authorities in implementing suitable waste management systems. In this study and based on the survey of 250 households in Subang Jaya and 250 households in Ampang Jaya, the results demonstrated that there was a significant relationship between the number of recycling participants and the number of recycling centres in their area. The results also

showed that 68% of the households resided in Subang Jaya took part in recycling. Subang Jaya is known as a better-structured housing neighbourhood with more recycling facilities. Ampang Jaya however, had fewer recycling centres than Subang Jaya. The study discovered only 43% of households participated in recycling activities. A statistical test showed a significant difference in the number of recycling participants between the two study areas. There were very few respondents who described rubbish with recycling or positive reference to recycling. On the other hand, 55.2% respondents of Ampang Jaya and 50% from Subang Jaya had propensity to relate rubbish as something negative such as; nuisance, useless, unwanted and something they urgently want to dispose of, rather than what they could do to reduce or manage them. The result of this study found that most households understood the definition, benefit of recycling and the duties they were required to perform as consumers to help managing their waste. Thus, education in recycling was not the main factor prevented them in taking part in recycling. The main factor for not recycling stated by non-recycling participants of Ampang Jaya was the location of the recycling centres. As mentioned by non-recycling participants in Ampang Jaya, the longer the distance between the recycling centre and the area they live, the harder it was for them to be able to take part in the recycling programme. The main factor for indolence towards recycling mentioned by non-recycling participants in Subang Jaya was that there were no door-to-door recycling pick-up services available. Non-recycling participants from both areas also agreed that door-to-door pick up service with regular time schedule would be very helpful for those with inconvenient time and for those with no transportation. Further research is required to identify more clearly the reasons for non-participation in local authority recycling schemes and to identify mechanisms for the improvement of participation rates.

Abstrak Tesis yang dikemukakan kepada Senat Universiti Putra Malaysia

sebagai memenuhi keperluan untuk ijazah Master Sains

AMALAN ISI RUMAH TERHADAP KONSEP KITAR SEMULA SISA PEMBUANGAN DI KAWASAN AMPANG JAYA DAN SUBANG JAYA, SELANGOR

Oleh

OCTANIA P. RICHARDSON

Oktober 2005

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Bagi menjayakan skim kitarsemula dikalangan isi rumah, adalah penting untuk mengkaji tahap amalan, persepsi serta sikap terhadap skim kitar semula. Walaupun skim kitarsemula bergantung kepada sifat sukarela isi rumah, ianya amat berkait rapat dalam menjayakan skim kitarsemula. Walaupun bagaimanapun, hanya sedikit kajian telah dijalankan dalam menilai keberkesanan serta sikap orang awam terhadap skim kitarsemula. Kajian ini merupakan permulaan kepada persepsi orang awam terhadap skim kitarsemula melalui kajiselidik secara bersemuka. Dengan mengenalpasti halangan, tahap insentif dan amalan pengitarsemula dan amalan bukan pengitarsemula dapat membantu pihak berkuasa tempatan dalam melaksanakan pengurusan pembuangan sampah yang sesuai. Daripada kajiselidik yang dijalankan, keputusan daripada 250 orang dari Subang Jaya dan Ampang Jaya menunjukkan hubungan yang ketara di antara pusat kitarsemula dengan amalan isi rumah. Sebanyak 68% di kalangan isi rumah di Subang Jaya mengamalkan skim kitarsemula. Ini adalah kerana, kawasan Subang Jaya mempunyai banyak pusat kitarsemula. Manakala di Ampang Jaya, hanya 43% sahaja

dikalangan isi rumahnya yang mengamalkan skim kitarsemula. Ini adalah kerana jumlah pusat kitarsemula di Ampang Jaya adalah kurang berbanding dengan Subang Jaya. Ujian statistik daripada dua kawasan kajian menunjukkan perbezaan ketara dalam bilangan peserta. Hanya sebilangan kecil daripada responden yang berfikiran positif terhadap pengamalan kitarsemula. Sebaliknya, 55.2% responden daripada Ampang Jaya dan 50% responden dari Subang Jaya berpendapat sampah hanya membawa kepada keburukan seperti tidak berguna, membawa masalah, tanpa memikirkan cara untuk mengurus atau mengurangkan bilangan sampah. Keputusan yang didapati daripada kajian ini menunjukkan bahawa kebanyakkan isi rumah mempunyai kefahaman terhadap kebaikan amalan kitarsemula, serta peranan mereka dalam menguruskan sampah-sarap. Oleh demikian itu, pendidikan bukanlah merupakan faktor utama yang menyebabkan kurangnya penyertaan dalam kitarsemula. Sebanyak 49.3% bukan pengamal skim kitarsemula di Ampang Jaya menggunakan alasan jarak jauh pusat kitarsemula dari kawasan perumahan sebagai faktor utama mereka tidak mengamal kitarsemula. Manakala 46.25% bukan pengamal kitarsemula di Subang Jaya menyatakan ketiadaan perkhidmatan pengutipan dari rumah ke rumah sebagai faktor yang menyebabkan mereka tidak mengamal skim kitarsemula. Responden daripada kawasan kajian yang tidak mengitarsemula juga bersetuju bahawa khidmat pengambilan dari pintu ke pintu dapat membantu mereka yang kesuntukan masa dan tidak mempunyai kenderaan. Kesinambungan kajian ini diperlukan bagi mengenalpasti faktor yang menyebabkan tiada sokongan daripada kalangan orang awam dalam skim kitarsemula serta mengenalpasti mekanisme yang dapat meningkatkan sokongan daripada orang awam.

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With God's blessing, I hope that this thesis would do some good in the future.

Octania P Richardson

Kuala Lumpur, Malaysia, July 2005

I certify that an Examination Committee met on 24th October 2005 to conduct the final examination of Octania Perwirasari Richardson on her Master of Science thesis entitled "Household Behaviour Towards Waste Recycling in Ampang Jaya and Subang Jaya, Selangor" in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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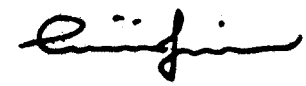

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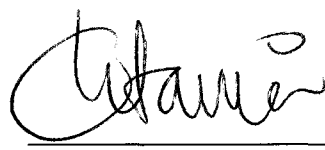
Date: 07 FEB 2006

DECLARATION

I hereby declare that the thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.



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CHAPTER 1

INTRODUCTION

1.1 Foreword

The municipal solid waste management practice in Malaysia is inclined to the 'end of pipe' approach, where all wastes will be treated and disposed of at the landfill, and as a result it increases the volume of waste reaching landfills (Abdul-Talib, 2004). This may be caused by the poor implementation of the waste management hierarchy system i.e. reduce, replace, re-use and recycle. 75% out of 83 landfills in Kuala Lumpur, Selangor, Pahang, Terengganu and Kelantan were considered uneconomic for further operation and the remaining 25% were believed workable provided extensive investments are given (Budzik et. al, 2003). For that reason, two agendas were currently being promoted; recycling campaign and the introduction of large-scale incineration systems. However, the public were not very responsive towards these two programmes, especially for the incineration projects (Abdul-Talib, 2004). Although there were many reported successes in recycling, most of them are localised in certain municipalities.

The three most established strategies in integrated waste management are source reduction, reuse and recycling (Tchobanoglous, 1993). Source reduction is the highest priority in waste management programme. Recycling should, where practical, be carried out before other treatment and disposal technologies are introduced. Mainwaring, (1995) mentioned that recycling programmes are aimed to substitute secondary materials obtained largely from obsolete final products, for primary or virgin materials, obtained from natural resources.

The Malaysian Ministry of Natural Resource and Environment had recently launched a recycling campaign, themed 'Throw rubbish, think money'. The Ministry message was that the public must change their attitude towards wastes if the current recycling rate were to be improved. The current recycling rate in Malaysia is 5 % and the goal is to achieve 22% by 2020 (CAP, 2001). The waste generation rate in Malaysia (with population of 24 million in 2005) is relatively high (0.76 kg/person/day) compared to other developing countries, and made of mainly food (45%), papers (7%), plastics (24%), steel (6%), glass (3%) and other items. (Abdul-Talib, 2004)

The successful implementation of a recycling scheme in a country requires both the national and local government guidelines, policies and strategies for high levels of public participation (Tucker et al., 1998; Petts, 1997). The strategies include plans to encourage and persuade the public to change their current recycling behaviour. Addressing the public's views on environmental issues is therefore important. Eden (1996) argues that behaviour is dependent upon public interpretation of the recycling issues.

Recycling of household solid wastes is one of the means to manage the burden of municipal solid wastes. However, in order to make recycling a major impact, it is vital that the public makes recycling behaviour as a norm rather than the exception. Recycling education programmes are a major means of achieving the recycling target. They seek to increase society's knowledge about waste reduction and recycling behaviours, develop a positive attitude about such behaviour, and encourage non-participating household to start in recycling activities and participating household to recycle more in the future

(Young, 1990). Many studies (Anand, 1999; Fuentes-Valdez et al., 2000; Grodzinska-Jurczak et al., 2001; Herna´ndez et al., 1999) emphasized the importance of creating awareness in people to participate in waste reduction through recycling programmes. There were many other studies on the topic of solid waste management in Malaysia, and a study conducted by Hassan et al., (2000) was one of the examples that considered the reusability and recovery of wastes in order to reduce environmental burdens.

1.2 Problem Statement

The Malaysian government through the Ministry of Housing and Local Government has spent millions of Ringgits over the past few years in advertisements and campaigns related to recycling. These efforts were aimed at the public to increase their participation in recycling schemes. However, most Malaysians do not take part in a recycling scheme. Thus, most wastes end up in landfills and this is worsened by the fact that most landfills in Malaysia are open dumps (Abdul-Talib, 2004; Mahmood, 2000). To reduce the amount of waste being disposed at landfill sites, the public needs to start reducing their waste then followed by reuse and recycle (3R). A recent survey by the Ministry of Housing and Government showed that most of respondents admitted that they were aware of recycling programmes but only few of them actually participated in recycling. Past study conducted by McDonald et al. (1998) also found that although many household say that they were in favour of recycling, they did not necessarily translate this into action.

1.3 Solid Waste Management in Malaysia

According to Mahmood (2000), the waste collection and disposal by-laws 1983 is the basis for the local authorities to regulate the disposal of wastes in Malaysia. Although storage bins are mentioned in the by-laws, there is no standard set up in the types of containers in regards to the size and materials to be used and issues on separation of waste. In addition, collection, transportation and disposal of waste were not properly addressed in the by-laws. These include restriction on dumping procedures and improper locations for the disposal of wastes. Without by-laws procedures, we will not be able to maintain a high standard of services of proper waste management. The Ministry of Housing and Local Government (1998) pointed out that the amount of waste generation in Malaysia is projected to increase at 3.4% per year (Refer to Table 1.1). In Malaysia, urban areas generate more paper and plastics waste compared to the rural areas that generate more organic wastes (Mahmood, 2000). Waste composition varies according to the lifestyle.

Table 1.1 Estimated Populations and Waste in Malaysia

Year	Population (million)	Estimated waste (Tons/year)
1991	17 567 000	4 488 369
1994	18 917 739	5 048 804
2015	31 773 889	7 772 402
2020	35 949 239	9 092 611

Source: Ministry of Housing and Local Government (1998)

According to Sinha, K. (2004), solid waste management in Malaysia is relying directly on the following acts;

- The Local Government Act 171, 1976
- The Street Drainage and Building Act, 1974
- The Environmental Quality Act, 1974
- The Town and Country Planning Act 172, 1976

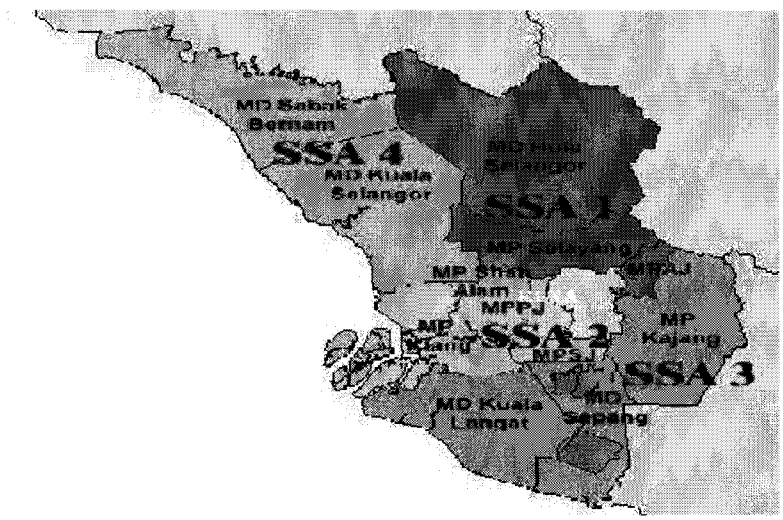
Nevertheless, there are a few policies related to recycling programmes in Malaysia. These include Privatisation Policy, National Development Programmes, National Environmental Policy and also National Recycling Programme (NRP). Lacking of both external (national level) and internal (local level) guidance would cause problems for waste management at the municipality level. For example, legal definition of waste in Malaysia is not clearly defined, and as a result, the types of waste that should be managed under the law cannot be defined clearly.

There were some recycling programmes conducted by the national solid waste collection concessionaires, such as Alam Flora. The details on the total number of talks and programmes carried out by the company are summarised in Table 1.2 and Figure 1.1 for the detail of the service areas divisions.

Table 1.2 Total number of recycling programmes conducted by Alam Flora

Program	School			Community			Wastewise		
Service area	Collection point	No of talks	Total program	Collection point	No of talks	Total program	Collection point	No of talks	Total program
KLSA	44	3	69	12	3	35	43	4	14
SSA1	1		62	6	3	14			1
SSA2	10	5	109	10		17	2		4
SSA3	18	1	81	3	1	14	7	1	18
SSA4	2		13	2			3		30
PSA1	5		36	48		30	15		3
PSA2	6	1	29	6		3	9		4
PSA3	7	1	137	10		5	9		9
PSA4	7		38	5		5	1		
PSA5	2		8	2		3	1		1
Total (July)	102	11	582	105	7	126	90	6	84

Source: www.alamflora.com.my, July 2003

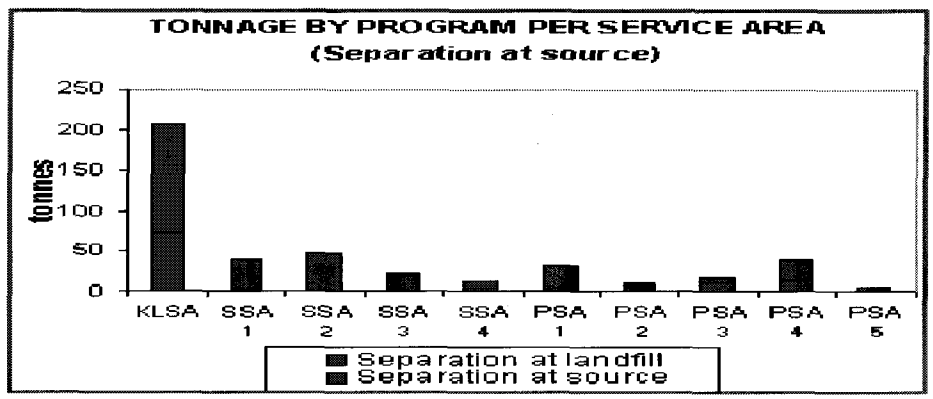


Source: www.alamflora.com.my, July 2003

Figure 1.1 Service Area managed by Alam Flora

Figure 1.2 clearly explains that most of wastes collected from SSA1 area were separated at landfill; SSA2 on the other hand, had numerous amount of waste separated at source. What made these differences? This study will therefore concentrate in two areas

(Ampang Jaya from SSA1 and Subang Jaya from SSA2), to identify and compare the traits between non-recycling participants and recycling participants of the two areas.



Source: www.alamflora.com.my, July 2003

Figure 1.2 Tonnage By Programme per Service Area

The data posted by Alam Flora, (2003) showed only about 5% of wastes in SSA1 was separated at source, while SSA2 managed to separate 50% of their wastes at source. MD Hulu Selangor, MP Selayang and MPAJ were the areas under SSA1 and areas under SSA2 were MP Shah Alam, MPPJ, MP Klang and MPSJ. Two areas were chosen in this study, Ampang Jaya which was part of MPAJ, and Subang Jaya which was part of MPSJ. These two areas were both provided with recycling facilities, the difference was that Subang Jaya had at least three recycling facilities within 5 km radius, while Ampang Jaya only had one recycling facility within 9 km radius. Thus, these two areas were specifically chosen to study whether the number of recycling facilities affects the number of recycling participants. For example, will a population of sample from Subang Jaya which has better recycling facilities have a higher percentage of recycling

participants, compared to Ampang Jaya? This study only interviewed respondents who live in houses. Recycling participants referred in this thesis are members of the public that participate in recycling activities in the area regularly.

1.4 The Aim and Objectives of The Study

The aim of this study is to encourage non-recycling participants to start taking part in recycling scheme and to persuade recycling participants to separate all their recyclable waste. The results of this study can also be used to assist the development of policy to encourage the recycling practices. The objectives of the study are as follows:

1. Identifying the main factors affecting household behaviour towards recycling such as the characteristics, motivators, barriers and incentives of recycling participants and non-recycling participants in an effort to determine how recycling activities can be improved and encouraged;
2. Categorising household waste types, recycling frequencies and the recycling rates;
3. Analysing respondents' awareness toward waste problems and education in recycling; and
4. Evaluating respondents' responses toward an economic incentive such as a deposit and refund scheme

1.5 The Importance of the Study

By identifying the barrier to recycling, incentives and disincentives to recycling and attribute of recycling participants and non-recycling participants, this study would help the local authorities in implementing suitable and adequate recycling facilities, which